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U. S. Department of Transportation  
Federal Aviation Administration  
Southwest Region

## SPECIFICATIONS

Volume I  
Scholes International Airport  
Galveston, Texas

FINAL

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**for**  
**Galveston, TX. RTR Facility**  
**Volume I**

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## 01010 SUMMARY OF WORK

### **PART 1.00 GENERAL**

#### **1.01 WORK INCLUDED:**

- A. These specifications, along with the accompanying drawings, describe the requirements for the construction of a Federal Aviation Administration RTR Antennas located at Galveston, Texas Scholes International Airport; work necessary to complete the structure as well as related utilities as indicated by the drawings and specified herein.
- B. Contractor shall furnish all plant, labor, equipment and material, supplies and transportation required to perform the work, including erection or installation of items , all in strict accordance with the drawings and specifications.
- C. The construction site is located at Galveston Texas Scholes International Airport. This is an active airport and the Contractor will comply with all procedures, rules and regulations of the airport.
- D. The construction site is located in an area having developed construction. Utilities are existing on, or adjacent to the site as indicated on the drawings. Modifications of and extensions to these utilities shall be made by the Contractor as indicated on the drawings.
- E. The scope of work includes the establishment of a RTR Antennas on an existing administrative base building, the project also includes the disposal and haul of the existing materials that's used to support existing antennas .
- F. This work shall be accomplished using Specification Volumes I and the project drawings listed in Appendix B of the specifications.
- G. The construction site is located within the airport boundaries. The contractor will need to comply with all procedures, rules and regulations in effect by the Jefferson County and airport authorities.

**1.02 RELATED WORK COVERED ELSEWHERE:**

Special Provisions	Section 01030
Submittals	Section 01300
Temporary Facilities	Section 01510

**1.03 SUBMITTALS:** [Not Used]

**1.04 STANDARDS AND REFERENCES:**

**A. STANDARDS:**

All FAA, Military, Federal, Industrial and other Standards, Specifications, and Codes referenced in the following Divisions form a part of this specification and are applicable to the extent specified herein.

**B. APPLICABLE DRAWINGS:**

All architectural, structural, site improvement, landscaping, yard sprinkler system, mechanical, plumbing and electrical drawings form a part of requirements of the construction. Refer to the Index of Drawings, Appendix "B" for a listing of drawings that are applicable to this Project.

**PART 2.00 PRODUCTS** [Not Used]

**PART 3.00 EXECUTION**

**3.01 COORDINATION AND REGULATORY AUTHORITY:**

The Contractor shall coordinate all contacts with other governing agencies, such as airport authorities, through the FAA's designated Contracting Officer, or the Resident Engineer when such responsibility has been delegated by the Contracting Officer.

END OF SECTION

## **01030 SPECIAL PROVISIONS**

### **PART 1.00 GENERAL**

#### **1.01 RELATED WORK COVERED ELSEWHERE:**

Submittals	Section 01300
Site Preparation	Section 02100

#### **1.02 JOB CONDITIONS:**

Contractor is hereby notified that written notification of any planned shut-down of existing facilities and/or utilities which may affect airport or FAA operations, shall be provided 2 weeks in advance of such a shut-down. The existing antenna is located on the roof of the base building, all work will be performed on the flat roof area, some climbing is involved and a ladder will be needed. Contractor will need to erect the antenna as per the existing antenna, and supply new heliax cable run to the existing RTR Room as per the existing cable..

#### **1.03 PLANS OF ACTION:**

- A. The Contractor shall not perform any work which will require shutting down essential services, including electrical power or control power, without an approved Plan of Action.
- B. The Plan of Action shall consist of a typewritten report describing the construction necessary, the utilities, piping or other services that will be affected, the length of time that the service or utility will be disturbed, and the procedures to be employed by the Contractor to carry out the work in a timely manner. This plan shall also include action to be taken in the case of emergencies, and an alternate plan that can be employed in the event that the original schedule can not otherwise be met. The Contracting Officer must approve the plan prior to any work being performed.
- C. Shutdowns must be approved by the Contracting Officer in all circumstances, and shall be scheduled in a manner to create the minimum amount of interference's with existing FAA or Airport facility operations. When shutdowns are necessary and have been approved by the Contracting Officer, Contractor shall employ additional labor and shall work overtime as necessary to restore the facilities to operation at the earliest possible time.

#### **1.04 OBSTRUCTION LIGHTING AND MARKING OF SUPERSTRUCTURE:**

- A. When the superstructure or construction machinery reaches a height of 100-feet, temporary day marking and night lighting shall be provided by the Contractor. Temporary lighting shall consist of two (2) double obstruction lights, Crouse-Hinds #50021-116, L810 obstruction marker light with two (2) 116 watt 116A21/TS lamps, or equal. The lights shall be placed at the highest points of the structure and spaced as designated by the Resident Engineer. Lights shall be operated by means of photocell

having a manual by-pass switch. They shall be operative from sunset to sunrise and at time of low visibility and as directed by the Resident Engineer.

- B. Daytime marking shall be provided by attaching four (4) aviation orange and white checkerboard pattern flags 36-inch square on the highest points of the construction, spaced as designated by the Resident Engineer. Day marking and night lighting shall be maintained during all construction. The Contractor shall provide all necessary power for the temporary obstruction lights until the building is accepted by Government.

#### 1.05 HAZARDOUS MATERIAL CERTIFICATION:

- A. Contractor shall provide letters of certification for the project certifying no asbestos was used.
- B. Contractor shall provide letters of certification for the project certifying only lead-free paint, plumbing and flashing was used.

#### 1.06 CONSTRUCTION LIMITS:

The contractor shall confine operations, activities, storage of materials and employee parking within the areas shown on drawings BPT-ATCT-C05. This is mandatory and no deviations from this requirement shall be allowed without written permission from the Contracting Officer.

#### 1.07 SECURITY REQUIREMENTS:

##### A. PERSONNEL LIST:

Contractor shall provide the Resident Engineer with a list of contractor's personnel who will require access to the site. The list shall be kept current during project work.

##### B. SECURITY INVESTIGATION:

Contractor's personnel may be subject to security investigation by the FAA. Upon request by the Resident Engineer, the contractor shall promptly complete all security forms provided by the Resident Engineer.

##### C. RIGHT TO SEARCH:

Current procedures at FAA facilities include the "right to search." If in the judgment of the FAA, a reason to search a vehicle or person exists, such search will be made.

### **PART 2.00 PRODUCTS**

#### 2.01 MATERIALS:

Materials shall be as specified in the various sections of these specifications.

### **PART 3.00 EXECUTION [Not Used]**

END OF SECTION

## 01040 PROJECT ADMINISTRATION

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

The Contractor shall perform all administrative functions as necessary to ascertain that the work conforms to the Construction Documents.

#### 1.02 RELATED WORK COVERED ELSEWHERE:

Summary of Work	Section 01010
Special Provisions	Section 01030
Job Management	Section 01041
Cleaning	Section 01710

#### 1.03 SUBMITTALS: [Not Used]

#### 1.04 STANDARDS AND REFERENCES:

A. GENERAL SERVICES ADMINISTRATION (GSA):

Fed-Std. 795 "Uniform Federal Accessibility Standards"

B. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

29 CFR Part 1910 "Safety and Health Standard"

#### 1.05 JOB CONDITIONS:

A. DIVISION OF WORK:

1. No attempt has been made to divide the drawings into areas of responsibility for the various trades. It shall be the Contractor's sole responsibility to divide the work among his sub-contractors, and he shall be fully responsible for the coordination of any trade used on the project.
2. The division of specification into areas of similar types of work is not intended to represent a division of work between trades or sub-contractors, but merely for convenience in reading specifications or drawings. Separation of specifications into sections or representation of like work on the drawings shall not make the Government an arbiter to establish subcontract limits between the Contractor, his sub-contractors or between different trades and sub-contractors.

B. SUBCONTRACTOR'S QUALIFICATIONS:

Any trade employed on this project must be capable of demonstrating, by written proof, his experience and ability to perform the work satisfactorily. He must have adequate manpower for the task assigned and must be financially capable of producing the assigned tasks. The General Contractor shall certify to the Contracting Officer that the Sub-contractors used on this project met or exceeded the requirements as listed below.

The General Contractor shall have written proof of the qualifications of all its Subcontractors, and on request make this information available to the Contracting Officer or his representative. Contractor shall provide the Contracting Officer with written proof that the following subcontractors meet the qualifications listed below:

1. Section 02900 - Landscape Planting. Landscape planting and related work shall be performed by a firm with a minimum of five (5) years experience specializing in this type of work.
2. Section 02901 - Landscape Irrigation. Landscape irrigation contractor shall have five (5) or more years experience in this type of work.
3. Section 3500 – Precast Concrete Piles. Precast concrete piles contractor shall be skilled in the installation and testing of piles for buildings, and shall demonstrate his knowledge and experience in this line of work. The installing firm shall have a minimum of five (5) years experience in concrete pile work, including experience with the anticipated subsurface materials, water conditions, and techniques to be used on this project.
4. Section 06400 - Architectural Woodwork. The fabricator shall be an experience craftsman, skilled in woodwork and a manufacturer of quality products. Provide documentation of experience, including a list of recent projects and references for those projects.
5. Section 07251 - Sprayed Fireproofing. This work shall be by a specialty firm approved by the fireproofing material manufacturer. It shall have had experience in using the proposed materials on not less than 3 satisfactory projects of comparable character to this work.
6. Section 07255 - Intumescent Fireproofing. This work shall be by a specialty firm approved by the fireproofing material manufacturer. It shall have had experience in using the proposed materials on not less than 3 satisfactory projects of comparable character to this work and a minimum of 5 years of documented experience.
7. Section 07421 – Insulated Metal Panel System. The panel manufacturer shall furnish evidence of having been in the panel manufacturing business for at least twenty-five (25) years, and that he has been manufacturing panels of the type specified for at least five (5) years. The installer shall provide documentation of having performed at least five (5) recent projects of similar nature and size. The panel installer shall be approved by the panel manufacturer.
8. Section 07531 - Single Ply Roofing. The roofing applicator shall furnish evidence of having been in the roofing business for at least ten (10) years, and that he has been installing single ply roofing of the type specified for at least three (3) years. The Installer shall provide documentation of having performed at least five (5) recent projects of similar nature and size. The Installer shall be a franchised applicator of the roofing materials manufacturer. The roofing installer shall be certified by the roofing materials manufacturer.



9. Section 08710 - Finish Hardware. The hardware supplier shall have a competent builders hardware specialist available at all times to assist with installation problems and to check items of finish hardware. The hardware supplier shall be an authorized distributor for the manufactured items he proposes to furnish.
10. Section 09509 - Acoustical Ceilings and Suspension Systems. Erector's qualifications. Acoustical materials and suspension systems shall be installed by a workman experienced with this type of installation and approved by the manufacturer.
11. Section 09684 - Carpet. Carpet installer shall furnish evidence that he has been in business for not less than five (5) years, and has performed satisfactorily for jobs of similar size and complexity. Installer shall also be a franchised dealer of the manufacturer whose carpet he proposes to install.
12. Section 10270 - Raised Floor System. Installer qualifications. Raised floor system shall be installed by an authorized agent of the manufacturer or an independent installer acceptable to the manufacturer. A written approval of the qualifications of the installer by the manufacturer shall be submitted.
13. Section 14211 - Passenger Elevators. Elevator installation shall be made only by a qualified elevator installer having a minimum of six (6) years of experience in fabrication of elevators and who is an authorized representative of the Elevator Manufacturer whose product is used. The bidder must be able to demonstrate that he has installed similar elevators to that specified which have performed satisfactorily for at least three (3) years.
14. Sections 15260, 15280, 15290 - Insulation. Applicator shall be a company specializing in insulation applications with five (5) years minimum experience.
15. Sections 15310, 15340, 15375 - Fire Protection. The Installer shall be a qualified fire protection firm with a minimum of five (5) years of experience. The installer shall have completed at least ten (10) projects of this size, type, and complexity. Submit a list of completed projects along with references for those projects.
16. Section 15890 - Ductwork. The Installer of the air distribution system shall be experienced in this line of work and been in business for not less than ten (10) years.
17. Section 15975 - Direct Digital Control System. The direct digital controls subcontractor shall have a five (5) year experience record in the installation of direct digital control systems.
18. Section 16721 - Fire Detection and Alarm System. Planner/Installer: a company specializing in the planning and installation of smoke detection, extinguishing release, and fire alarm systems with a minimum five (5) years experience and at least five documented successful installations of systems similar in type, scope and function to the System specified herein. Planner/Installer shall be licensed by the State of Texas or, if required, by the Jefferson County Building Department.

19. Section 16722 - Security Access System. The Contractor shall currently maintain a locally run business for a minimum of five (5) years and shall be an authorized distributor of the supplied equipment with full warranty privileges.
20. Section 16760 - Paging System. The Contractor shall currently maintain a locally run business for a minimum of five (5) years and shall be an authorized distributor of the supplied equipment with full warranty privileges.

#### 1.06 GUARANTEES:

Material and equipment furnished by the various manufacturers shall be warranted in writing for a period of one (1) year, or unless noted otherwise elsewhere in contract documents, or industry standard for the material specified, whichever is greater.

#### 1.07 DRAWINGS AND SPECIFICATIONS:

- A. The Government will issue six (6) sets of drawings and specifications to the Contractor. Contractor shall print any additional copies as he deems necessary for the execution of the work at no additional cost to the Government.
- B. Generally the electrical drawings and any drawings relating to piping are schematic only and dimensions shall be followed without regard to scale. Drawings show the general arrangement and the extent of the work. Exact location and equipment arrangement shall be determined by the physical dimensions of the equipment actually furnished, by shop drawings, detailed dimensioned drawings.

#### 1.08 PROJECT MEETINGS:

Schedule weekly coordination meetings with the Contracting Officer to discuss conditions that affect the execution of the work. The Contracting Officer may invite local FAA personnel, airport officials or any representatives as deemed necessary. Contractor shall provide the location for the meetings and take minutes of these meetings and dispense to concerned individuals. Contractor shall provide at the meetings a rolling three (3) week schedule.

### **PART 2.00 PRODUCTS [Not Used]**

### **PART 3.00 EXECUTION**

#### 3.01 PROJECT INFORMATION REQUESTS:

Contractor shall use the procedures listed herein for obtaining project information. When Contractor finds it necessary to request additional information or interpretations of the Contract Documents, he shall request clarification in writing, using the forms or format determined by the Contracting Officer.

3.02 MATERIALS CONTAINING ASBESTOS:

No material or product which contains asbestos in any form may be used in this project.

3.03 LEAD FREE PAINT, PLUMBING AND FLASHING:

Only lead-free paint, plumbing and flashing may be used in this project.

3.04 NOTIFICATIONS:

Contractor shall give the Contracting Officer ten (10) calendar days advance notice of the beginning of each major stage of construction. The Contractor shall notify the Contracting Officer in writing ten (10) calendar days in advance of any testing required by specifications or drawings, or which is required by law, ordinance, or public authority. Notification shall state the date, time and place where such testing will be conducted.

END OF SECTION

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## 01041 JOB MANAGEMENT

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

Perform the administrative job related requirements necessary for the proper conduct of the work as indicated in this section and to comply with the General Conditions.

#### 1.02 RELATED WORK COVERED ELSEWHERE:

Project Administration	Section 01040
Submittals	Section 01300
Quality Control	Section 01400
Temporary Facilities	Section 01510

#### 1.03 POLLUTION CONTROL:

- A. Take necessary precautions to prevent contamination of soil or atmosphere by the discharge of noxious substances resulting from construction operations. Provide equipment and personnel and perform emergency measures necessary to contain any spillage.
- B. If contamination of the soil does occur, excavate contaminated soil and dispose of at an off-site location. Fill resulting excavations with suitable backfill and compact to the density of the surrounding undisturbed soil.
- C. Take measures to prevent dispersal of pollutants into the atmosphere. Do not dump or otherwise discharge obnoxious or harmful fluids into drains or sewers.

### **PART 2.00 PRODUCTS**

#### 2.01 MATERIALS:

Materials shall be in accordance with the requirements of the individual sections.

### **PART 3.00 EXECUTION**

#### 3.01 FIELD MEASUREMENTS:

Contractor is responsible for making complete field measurements. Check all dimensions at the job site for components requiring fit to surrounding conditions. Check shop drawings and indicate the actual dimension available at all locations.

#### 3.02 SAFETY REQUIREMENTS:

- A. Contractor is solely responsible for the safety and welfare of workmen on the project and the general public around the construction site. Take precautions to adequately safeguard the safety of all persons on or near the site. Comply with the regulations of the "Occupational Safety and Health Standards", and other safety regulations.

- B. Provide and maintain barricades, guard rails, covered walkways, and other protective devices necessary to warn and protect the workmen and general public from hazards at the construction site. Maintain barricades around open ditches. Provide barricades at roads and passageways at dangerous conditions. Provide flares or flashing lights at such barriers at night. All barricades and protective devices shall comply with safety requirements and insurance carrier's requirements.

### 3.03 FIRE PROTECTION:

- A. Maintain fire extinguishers at construction site in sufficient number to adequately protect the structures during construction. Provide at least one fire extinguisher at each construction office. Provide at least one fire extinguisher for welders or other trades using open flames in the execution of their work.
- B. Maintain the telephone number of the local fire department. Keep number posted conspicuously near telephone.

### 3.04 DISRUPTION TO SERVICES:

- A. Disruption to existing utilities, piping, or electrical services must be held to a minimum. Contractor shall carefully plan work in a manner that such disruptions are coordinated with the Contracting Officer. Any operation which requires shut down of some portion of the facilities operation must be in compliance with Section 01030 SPECIAL PROVISIONS.
- B. Storm sewers and sanitary sewers shall be maintained in service at all times. In the event that it becomes necessary to disrupt one of the utilities, provide temporary service around the construction or otherwise construct the structure in a manner that the flow is not curtailed.

### 3.05 MAINTENANCE OF WATER:

- A. Contractor shall prepare a Storm Water Management Plan and submit to Contracting Officer for approval. After discussion and modifications, Contractor shall conform to detailed outline as approved. Contractor shall manage water at the job site at all times during construction, and shall furnish all equipment and perform any operations required to remove water from any part of the construction area as necessary to permit the proper installation of the work. The Storm Water Management plan shall contain, as a minimum, the following information:
  - 1. SITE DESCRIPTION:
    - a) Project Location
    - b) Nature of construction Activity
    - c) Sequence of Major Activities
    - d) Estimate of Total Site Area and Disturbed Area
    - e) Estimate of Run-off Coefficient
    - f) Information on Soil Types
    - g) Receiving Waters

2. MEASURES AND CONTROLS:

- a) Erosion and Sediment Controls
  - 1) Structural Controls
  - 2) Soil Stabilization
- b) Storm Water Management Controls
- c) Other Controls
  - 1) Dust Control
  - 2) Waste Disposal
  - 3) Sanitary/Septic Facilities On Site
  - 4) Water Source

3. IMPLEMENTATION:

- a) Posting locations for the Storm Water Management Plan
  - b) Designated individual responsible for implementation and maintenance of Measures and Controls
  - c) Maintenance and Repair Schedule
- B. If necessary, provide well points or any other acceptable method to remove water. Maintain excavations entirely clear of water during installation of piping, duct banks or construction of footing. Fresh concrete shall be adequately protected from injury resulting from ground water or the handling or disposal of water.
- C. Contractor shall direct the water away from the site in a manner that prevents re-occurrence or that causes water to run onto adjacent property. Drainage ditches must be approved by the Contracting Officer. In the event that water from this site results in flooding or other damage to adjacent property, Contractor shall be responsible for repair damage or make payment to the affected land Owner.
- D. Maintain ditches and embankments necessary to protect open trenches or other excavations. Provide pumps to maintain excavations free of water. In the event water table must be lowered to maintain excavations in a dry condition, Contractor shall provide well points or other procedures necessary and shall operate such pumps until backfill has been completed. Lower water level 2 feet below trench level.

3.06 HAUL ROUTE:

Contractor shall haul excess from the construction site and dispose at disposal site at no additional cost to the Government. The Contractor shall provide a wheel wash for all vehicles exiting the construction site onto paved areas.

### 3.07 BLASTING:

No blasting will be permitted at this site.

### 3.08 WEATHER PROTECTION:

#### A. STRUCTURE:

The Contractor shall provide and maintain winter and weather protection with tarpaulins or polyethylene film supported on and secured to temporary framework and scaffolding to protect all parts of the structure and contents from damage by the elements, and to enable necessary concrete and other work to proceed in cold weather.

#### B. WALL OPENINGS:

As required by weather conditions, temporary weather closures shall be installed, maintained and subsequently removed at exterior walls, parapets, columns and roof construction. These closures shall be installed at the conclusion of each working period affecting such cuts and shall be maintained in weather-tight condition until work is resumed and completed. They shall be subject to approval and direction of the Contracting Officer.

### 3.09 SLEEVES AND EQUIPMENT BASE:

A. The Contractor shall furnish and install temporary watertight closures for sleeve openings below grade. Such closures shall remain in place until pipe installation in sleeves is completed and made watertight.

B. The Contractor shall coordinate the sizes, locations, and installation of all sleeves, curbs, pitch pockets, and equipment bases in a time and manner to avoid any hindrance to work of other trades. In the event that sleeves, inserts, and any imbedded items are to be placed in concrete, the Contractor shall form required openings in the work and shall be held responsible for any subsequent related cutting and patching.

### 3.10 ORDER OF PRECEDENCE:

Contractor shall coordinate work in a manner to avoid conflicts or interference's between trades. Layout work in advance of installation to ascertain location of the various systems and arrangement of piping and equipment. The Contractor shall be responsible to coordinate all work and take action as necessary to avoid conflicts between the work of the various trades. Establish the exact locations of equipment based on actual dimensions of the items furnished. Mechanical and electrical work shall be coordinated in sequence with the following precedence:

- A. AHU placement
- B. Gravity flow piping systems
- C. Cable trays
- D. Forced air ductwork systems
- E. Forced closed piping systems
- F. Fire sprinklers piping
- G. Light fixture locations
- H. HVAC diffusers, registers and returns



- I. Fire sprinkler heads
- J. Electrical conduits & raceway systems
- K. Intercom & communications components
- L. Exit lights

3.11 INITIAL MAINTENANCE:

- A. All equipment shall be maintained by the Contractor until the project is turned over to the Government. Contractor shall insure that mechanical equipment is properly greased, oiled, or otherwise cared for as recommended by the manufacturer. Do not operate air handling equipment unless filters are in place and are clean. Filters shall be changed weekly during construction.
- B. Just prior to the Government taking possession, service all equipment, making sure that all oiling points are oiled, bearings are greased, and other maintenance is performed. Replace all replaceable filters and clean permanent filters associated with air handling units or other packaged equipment.

END OF SECTION

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## **01400 QUALITY CONTROL**

### **PART 1.00 GENERAL**

#### **1.01 WORK INCLUDED:**

- A. FAA will secure the services of an independent, qualified testing laboratory for the purpose of performing testing as required by the various sections of the specifications. Testing performed by the FAA will be paid for by the Government. Contractor shall cooperate fully with the Contracting Officer and his testing laboratory to facilitate the testing services.
- B. When re-testing is required due to noncompliance with the requirements of the specifications, Contractor shall pay for the re-testing.

#### **1.02 RELATED WORK SPECIFIED ELSEWHERE:**

Project Administration	Section 01040
Job Management	Section 01041
Testing of HVAC Systems	Division 15
Testing of Electrical Systems	Division 16

#### **1.03 DELIVERY AND STORAGE:**

Test cylinders made at the construction site shall be handled and protected in accordance with recognized test procedures.

#### **1.04 JOB CONDITIONS:**

- A. The Contracting Officer reserves the right to perform testing at any state of construction. Contractor shall make the site available to the Government's testing organization, and shall cooperate fully in the performance of these tests. Where the Contracting Officer has made it known that certain testing is to be performed, Contractor shall give FAA adequate notice before proceeding with work that would interfere with testing.
- B. Contractor is responsible to notify the Contracting Officer at such times that testing is required. Do not proceed with any work until testing services have been performed and Contracting Officer approves results of tests.
- C. The Government reserved the right to have 30 days after test samples have been made prior to rendering a decision on such tests.
- D. The FAA reserves the right to direct re-testing in the event of failure and any re-tests shall be at the Contractor's expense.

### **PART 2.00 PRODUCTS [Not Used]**

## **PART 3.00     EXECUTION**

### **3.01     TESTING:**

- A.     Perform all tests as indicated in the various sections of the specifications. Provide Contracting Officer 24 to 48 hours notice of any testing.
- B.     Cooperate with the Government and its testing laboratory. Provide complete access to the site and make Contract Documents available. Contractor shall furnish sample material required for testing and shall furnish personnel and equipment needed to perform sampling, or to assist in making the field tests. Deliver samples or test cylinders to the location designated by the Contracting Officer.
- C.     Samples made at the site and sent to a testing laboratory for performance of testing shall be identified by the Contractor in such a manner that designates the exact location at which the sample was taken. Concrete cylinders shall be marked with a unique identification number which corresponds to a log number. The log will include the concrete company, truck or ticket number, mix design, time of day, temperature of ambient air and concrete temperature. The drawings will be marked with a colored mark which identifies the extent of concrete placed as represented by the test cylinder.
- D.     All other samples will be identified with such information suitable to identify the source and such other information required by the Contracting Officer.
- E.     Testing of HVAC and Electrical Systems are specified under the individual Sections of Division 15 and 16.

END OF SECTION

## **01700 CONTRACT CLOSEOUT**

### **PART 1.00 GENERAL**

#### **1.01 COMPLETION CERTIFICATE:**

When the contractor considers the work is complete, the Contractor shall submit written certification that the contract documents have been reviewed; work has been inspected for compliance with contract; equipment and systems have been tested in the presence of the COR and are operational; required operational, and maintenance manuals, data, and parts list have been submitted and approved; spare parts have been provided as required; required instruction of maintenance personnel has been accomplished; and work is completed, premises cleaned and ready for inspection.

#### **1.02 FINAL INSPECTION:**

A written request for a final inspection must be sent to the COR 14 calendar days prior to the requested inspection date. The final inspection shall be scheduled at a mutually agreed date, and will be acknowledged by the COR. The Contractor shall develop his own pre-final inspection and correct all deficiencies prior to requesting the final inspection. The pre-final report must accompany the final inspection request.

If during the final inspection, the COR, in concurrence with the inspection team and Contracting Officer determines that the General Contractor was not ready for the final inspection, based on the Contractor not meeting all of the contractual requirements, all cost incurred by the Government for additional inspections shall be deducted from the contract (such as, but not limited to: travel cost, per diem, salaries of all concerned parties, Consultant Engineer personnel required to participate in the final inspection). This dollar amount shall be actual cost incurred by the FAA to perform the inspection.

#### **1.03 PUNCH LIST:**

During the final inspection, the COR (in coordination with the Regional Office and local FAA personnel) shall develop a list (Punch List) of all discrepancies (unsatisfactory work, latent or patent defects). This unofficial list will be furnished to the contractor as a draft list after the final inspection. Only one official punchlist will be generated by the inspection team.

The contracting Officer will furnish to the General Contractor the Official Punch List within fourteen days after the final inspection. The General Contractor shall be allowed 30 days to correct all deficiencies noted. Completion of the Punch List shall still be completed within the contract period.

#### **1.04 ACCEPTANCE OF WORK:**

The contractor shall correct discrepancies noted during the final inspection, clean the premises and notify the COR that the work is ready for acceptance. The COR shall verify the punchlist has been accomplished and initialize/date each item that it is completed.

1.05 WARRANTIES:

POSTED WARRANTY INFORMATION:

Submit data concerning the standard one-year warranty, including the warranty period (dates), and warranty contacts with names, addresses and telephone numbers. Post data, under glass, at a location as directed by the Contracting Officer.

1.06 EXTENDED EQUIPMENT/PRODUCT WARRANTIES:

A. EQUIPMENT/PRODUCT WARRANTY LIST:

Obtain and furnish to the Contracting Officer a bound and indexed notebook containing written warranties for equipment/products that have extended warranties (warranty periods exceeding the standard one-year warranty) furnished under the contract, and prepare a complete listing of such equipment/products. The equipment/products list shall state the specification section applicable to the equipment/product, duration of the warranty therefor, start date of the warranty, ending date of the warranty, and the point of contact for fulfillment of the warranty. The warranty period shall begin on the same date as project acceptance and shall continue for the full/product warranty period. This listing shall be fully executed and delivered to the Contracting Officer prior to final acceptance of the facility, and acceptable listing shall be a condition of final acceptance of the facility.

B. EQUIPMENT WARRANTY TAGS AND GUARANTOR'S LOCAL REPRESENTATIVE:

Furnish with each warranty the name, address, and telephone number of the guarantor's representative nearest to the location where the equipment and appliances are installed. The guarantor's representative, upon request of the using service's representative, will honor the warranty during the warranty period, and will provide the services prescribed by the terms of the warranty. At the time of installation, tag each item of warranted equipment with a durable, oil- and water-resistant tag approved by the Contracting Officer. Attach tag with copper wire and spray with a clear silicone waterproof coating. Leave the date of acceptance and inspector's signature blank until project is accepted for beneficial occupancy. Tag shall show the following information:

Type of Equipment/Product \_\_\_\_\_  
Warranty Period \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
Contract No. \_\_\_\_\_  
Inspector's Signature \_\_\_\_\_ Date Accepted \_\_\_\_\_

Construction Contractor:  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_

Warranty Contact: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_

#### 1.07    CLEANUP:

Leave premises "broom clean." Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Replace filters of operating equipment. Clean debris from roofs, gutters, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site.

**PART 2.00    PRODUCTS [NOT USED]**

**PART 3.00    EXECUTION [NOT USED]**

END OF SECTION

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## **01710 CLEANING**

### **PART 1.00 GENERAL**

#### **1.01 WORK INCLUDED:**

Just prior to occupancy of the building by the Government, and prior to Contract Acceptance Inspection (CAI), the Contractor shall perform a thorough cleaning of the site, buildings, and other structures.

#### **1.02 RELATED WORK COVERED ELSEWHERE:**

Project Administration	Section 01040
Job Management	Section 01041
Temporary Facilities	Section 01510
O&M Manuals	Section 01730

#### **1.03 SUBMITTALS:**

- A. Submittals shall be in accordance with Section 01300 SUBMITTALS, and shall include the following:
  - 1. Record of Finishes
  - 2. Maintenance Instructions
- B. Include a typewritten description of finish materials along with a list of the cleaning products recommended by the manufacturer. Include these forms in the appropriate section of the O & M Manual. Refer to Section 01730 Operational and Maintenance Manuals. Include the description of maintenance needed, including daily, weekly, and monthly maintenance instructions. Complete a maintenance instruction form for the following:
  - 1. Vinyl Composition Tile
  - 2. Acoustical Tile
  - 3. Ceramic Tile
  - 4. Vinyl Wall Fabric
  - 5. Carpet

### **PART 2.00 PRODUCTS**

#### **2.01 MATERIALS:**

Furnish all materials and equipment needed for cleaning and waxing purposes. Cleaners and waxes shall be as recommended by the manufacturer for the individual material.

## **PART 3.00 EXECUTION**

### **3.01 SITE CLEANING:**

The Contractor shall maintain the site in a clean condition at all times. At the end of each work day Contractor shall gather all loose trash and debris from around the site and place in trash containers or remove from site. Contractor shall not stack trash or other construction debris on the ground or in the open. Trash must be placed inside closed containers. In no event shall trash or debris be allowed to become airborne or be allowed to blow around or off site.

### **3.02 ROUTINE CLEANING:**

- A. Buildings shall be routinely cleaned to remove all construction debris, packing crates, wrappings, packing materials, or other trash. Each trade shall be responsible to remove trash and debris resulting from his operations.
- B. Generally the entire space of buildings shall be maintained in a clean condition at all times. Once partitions have been installed, spaces shall be maintained in a "broom-clean" condition. Prior to installation of finishes and paint, spaces shall be thoroughly cleaned of trash and debris, floors swept clean and mopped to remove dust.

### **3.03 FINAL CLEANING:**

- A. Thoroughly clean the entire building and make ready for occupancy. Remove construction debris, boxes and trash. Clean the entire site, removing all trash from the site. Remove construction storage sheds and field offices and restore grade to match surrounding condition. Remove excess dirt and complete sitework.
- B. Clean floor and inspect for damage. Replace damaged flooring. Remove paint dripping and other spillage. Sweep floors clean, then mop repeatedly until thoroughly clean. Resilient flooring shall be cleaned with an approved cleaner and given a one coat application of liquid floor polish as recommended by the manufacturer. Polish to buffed appearance with powered floor buffer. Remove oil, grease and other contaminants from concrete floors, then mop repeatedly until thoroughly clean. Vacuum carpets with powered floor sweepers to remove dirt and dust. Remove glue or other substances from nap of carpet.
- C. Clean and polish inside and outside surfaces of all glass. After washing with window cleaner and water, apply a coat of high quality glass polish and wipe clean. Clean and polish mirrors to a clear luster, free of smears or dried polish. Do not scratch or otherwise mar glass surfaces.
- D. Clean wall surfaces to remove dirt or scuff marks. Remove excess adhesive along top edges of wall base. Remove adhesive from surfaces of vinyl wall coverings.
- E. Inspect acoustical tile. Align tile to fit properly in grid. Replace cracked or damaged tile. Remove smear marks and other dirt from tile. Clean surface or grid system.
- F. Inspect all painted surfaces. Spot paint nicks and other damage. If spot-painting does not blend into the existing color and texture of the surrounding surfaces, repaint wall from inside corner to inside corner.

- G. Clean all plumbing fixtures, valves and trim. Clean toilet seats and covers. Remove labels and adhesive from fixtures. Remove floor drains and clean baskets or buckets. Polish strainers. Polish exposed chrome or brass.
- H. Clean mechanical rooms. Remove dirt and dust from equipment and apparatus with vacuum or compressed air. Remove oil, grease and other contaminants from floors and equipment. Remove and clean screens at strainers in piping systems. Clean, insects and dust from louver screens.
- I. Clean and polish ceramic tile floors and wall surfaces. Remove mildew or other stains. Tuck point defective joints.
- J. Inspect all exterior painted surfaces. Spot paint any damaged surfaces. Damaged surfaces on factory finished equipment shall be touched up with special paint furnished by the manufacturer.

END OF SECTION

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## 02050 DEMOLITION

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

- A. Furnish labor, materials, equipment and incidentals necessary for every type of required demolition.
- B. Furnish equipment of every type required to demolish and transport construction debris away from the site.

#### 1.02 RELATED WORK COVERED ELSEWHERE:

Special Provisions	Section 01030
Cleaning	Section 01710
Site Preparation	Section 02100

#### 1.03 QUALITY ASSURANCE: [NOT USED]

#### 1.04 SUBMITTALS: [NOT USED]

#### 1.05 STANDARDS AND REFERENCES:

Work shall be performed in accordance with the codes and ordinances of the agency having jurisdiction over the Place of Record.

#### 1.06 DELIVERY, HANDLING AND STORAGE:

Stockpile construction debris at the site only as long as necessary to haul to a disposal site. Stack materials neatly and handle in an orderly manner until removed from site.

#### 1.07 JOB CONDITIONS:

- A. The site and drawings shall be carefully reviewed to determine the extent of necessary demolition and to identify elements of the existing construction which are to remain in place. Property lines and limits of demolition shall be accurately located prior to beginning site demolition. Demolition shall not be performed outside the limits indicated on the plans, or outside the FAA lease lines.
- B. Determine the location and depth of underground utilities and avoid damage during demolition procedures.
- C. Material removed from the construction site during demolition, and any equipment not otherwise designated to remain the property of the Government shall become the property of the Contractor, and shall be promptly removed from the construction site.
- D. Equipment and material designated as remaining the property of the Government shall be removed from the structure and hauled to a designated location on the site and stored for the Government's use. Store on wood runners raised above the surrounding grade and cover with weather resistant covering and tie securely.

- E. Take necessary precautions in removing Government designated property to prevent damage during the demolition process. Equipment shall be removed in one piece. Loose components may be removed separately.

**PART 2.00 PRODUCTS [NOT USED]**

**PART 3.00 EXECUTION**

**3.01 SITE CLEARING:**

- A. Perform site clearing to the limits indicated on the drawings. Scrape the site, removing brush, weeds and trash. Haul debris away from the construction site as it accumulates.
- B. Grub out brush roots within the limits of buildings, parking lots, driveways and other structures. Remove rock out-croppings and boulders from any area within the limits of grading or structures.

**3.02 DEMOLITION:**

- A. Demolition shall include any item noted on the drawings or required to make room for new work as indicated on the drawings. Demolition drawings included in the Contract Documents are provided for Contractor's reference, but are not intended to limit the demolition to those items shown or otherwise noted. Contractor is responsible to verify for himself any demolition necessary to perform the work.
- B. Where conduit, piping, or other utilities are presently installed underground and noted to be abandoned in place, contractor shall remove conduit or piping to a point twelve (12) inches below grade and cap off. Direct buried cables shall be cut twelve (12) inches below grade.

**3.03 BACKFILLING:**

Backfill cavities resulting from demolition. Fill cavities occurring within the limits of building, structures, or pavements in accordance with the requirements of other sections of the specifications. Backfill and compact cavities outside the construction limits to the same density as the surrounding earth. No testing is required for this type of fill.

END OF SECTION

## 02100 SITE PREPARATION

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

Furnish labor, materials, equipment and incidentals necessary to prepare the site for construction, including the removal of trees and brush, and disposal of construction debris.

#### 1.02 RELATED WORK COVERED ELSEWHERE:

Temporary Facilities	Section 01510
Landscaping	Section 02900

#### 1.03 JOB CONDITIONS:

- A. Except where further excavation extends beyond the cavities resulting from work performed under this section, fill holes with appropriate backfill material and compact to the density of the surrounding undisturbed soil. Finish the site by blading or other methods to smooth the area, remove ditches, mounds, or other natural or manmade irregular features. Blend grades together in a smooth uniform manner.
- B. Felled trees, brush, lumber, concrete, and other debris shall become the property of the Contractor, and shall be promptly removed from the site.

### **PART 2.00 PRODUCTS [Not Used]**

### **PART 3.00 EXECUTION**

#### 3.01 PREPARATION:

- A. Mark areas to be cleared and grubbed prior to commencing clearing operations. Contracting Officer shall approve clearing and grubbing limits prior to commencement of clearing operations.
- B. Remove brush outside the clearing limits, but within the immediate vicinity of the work, upon receipt of approval from the Contracting Officer, when brush interferes with or retards the progress of construction operations.
- C. The clearing limits shall not extend beyond the project limits.

#### 3.02 INSTALLATION:

- A. Scrape the entire site within the limits of construction, including structures, building, streets, parking lots or other pavements clear of brush, under-growth, or other vegetation.
- B. Remove any concrete or masonry structures within the limits of the construction, or as otherwise indicated, including concrete slabs, foundations, brick or other masonry work, concrete steps, septic tanks, sidewalks, pavements, curbs and gutters, or other components.

- C. Remove underground structures such as abandoned manholes, vaults, septic tanks and distribution field piping, inlets, buried trash, or debris.
- D. Take precautions during excavation procedures to guard against damage to active underground piping. In the event that inactive or abandoned pipelines are uncovered, determine that the lines are inactive, then remove buried piping within the limits of construction, or 4'-0" beyond the limits of buildings or other structures, or as needed to clear excavations. Plug both ends of such abandoned piping with concrete plugs.

3.03 FIELD QUALITY CONTROL:

Check the local regulations and consult with the Owner to determine whether burning will be permitted on the site.

END OF SECTION



## 03461 PRECAST CONCRETE PRODUCTS

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

Furnish labor, materials, equipment and incidentals necessary to install precast concrete products, including the following:

- A. Storm Drain Manholes
- B. Sanitary Sewer Manholes

#### 1.02 QUALITY ASSURANCE:

##### A. DESIGN CRITERIA:

Concrete for precast concrete shall be the manufacturer's standard mix for obtaining a minimum 28 day compressive strength of 4000 psi. Concrete shall be air entrained.

##### B. CERTIFICATION:

Submit concrete design mix along with the test results for concrete made from the mix.

#### 1.03 SUBMITTALS:

Submittals shall be in accordance with Section 01300, SUBMITTALS and shall include:

- A. Manufacturer's product data sheets.
- B. Concrete mix and test results.

#### 1.04 STANDARDS:

ASTM A-48	"Specification for Gray Iron Castings"
ASTM C-923	"Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes"
AASHTO	"Standard Specifications for Highway Bridges"

#### 1.05 DELIVERY AND STORAGE:

Ship precast concrete products to the site, unload and handle in a manner to prevent damage. Promptly remove any unit which is damaged from the construction site and replace with an undamaged unit.

#### 1.06 JOB CONDITIONS: [Not Used]

#### 1.07 OPTIONS: [Not Used]

#### 1.08 GUARANTEES: [Not Used]

## **PART 2.00    PRODUCTS**

### **2.01    MATERIALS:**

**A.     CEMENT:**

Portland Cement conforming to ASTM C-150, Type III.

**B.     REINFORCEMENT:**

New billet steel conforming to ASTM A-615 Grade 60, deformed in accordance with ASTM C-305.

**C.     AGGREGATE:**

Aggregate free of deleterious substances conforming to ASTM C-33; or ASTM C-330 for light weight aggregate.

**D.     SELF SEALING JOINT SEALANT:**

Butyl resin flexible strips conforming to Fed Spec SS-S-00210 and AASHTO M-198B. Sealant shall be Concrete Sealants "ConSeal" CS-102, or approved equal.

**E.     CAST IRON CASTINGS:**

Castings shall be gray cast iron conforming to ASTM A-48, Class A48 for cast iron, or ASTM A-536, Grade 65-45-12 for ductile iron.

**F.     MANHOLE STEPS:**

12" x 10" asphalt covered "C" shaped steps having slip resistant design on treads. Copolymer polypropylene coated Grade 60 steel reinforcement equal to Texas Industries, Inc. or approved equal.

### **2.02    MIXES:**

Concrete shall obtain a minimum strength of 4000 psi at 28 days. Mix shall be suitable to the component to be fabricated.

### **2.03    FABRICATIONS: [Not Used]**

### **2.04    MANUFACTURED PRODUCTS:**

**A.     CAST IRON CASTINGS:**

Manufactured true to pattern with frames and covers having machined surfaces tolerance of casting shall be + or -1/16" inch per foot. Castings shall be as manufactured by McKinley Iron Works, Fort Worth, TX or approved equal.

**B.     MANHOLE COVERS AND FRAMES FOR PRECAST PRODUCTS:**

Items installed in a street, drive, parking lot or other paved area shall be heavy duty traffic-type. Manhole covers and frames shall have ground bearing surfaces. Top of

manholes shall have either checkered or diamond patterns. Manhole frames and lids for storm water or sanitary sewers shall conform to standards of the governing agency. Use Neenah R-1412-A4 or approved equal.

C. **PIPE GASKETS:**

High performance flexible connectors designed to produce a positive watertight connection. The rubber gasket shall be a polyisoprene blend such as A-Lok Products, Inc., 697 Main Street, Tullytown, Pa. 19007, or approved equal. The gasket shall meet the requirements of ASTM C-923 and shall have a Shore A durometer hardness of 5.0 conforming to ASTM D-2240.

2.05 PRECAST CONCRETE:

Concrete and reinforcing shall comply with the requirements of Section 03300, CAST IN PLACE CONCRETE. Precast concrete products shall be factory cast in a controlled environment. Units shall be reinforced in accordance with the requirements stated herein.

**PART 3.00 EXECUTION**

3.01 PREPARATION; EXCAVATION AND BACKFILL:

- A. Excavate hole for precast item as necessary, providing adequate clearance around all sides. Prepare base for precast unit having a minimum of six (6") inches tamped sand cushion. Set precast units square, plumb and level. Bottom of excavation shall be determined to accurately locate the top of concrete at finish grade.
- B. Backfill and compaction around completed structures shall be as specified in Section 02221, TRENCHING, BACKFILLING, AND COMPACTION.

3.02 INSTALLATION:

A. **PIPE CONNECTIONS:**

Pipe penetration into precast concrete basins shall be made with a waterproof gasket in strict accordance with the manufacturer's printed instructions. End of piping to be mated with precast concrete structures shall be clean and dry and shall be coated with lubricant. Gasket shall be cleaned and lubricated. Press pipe into opening and position accurately.

B. **JOINTS IN PRECAST:**

Joints in precast concrete sections shall be made with a butyl resin seal such as Concrete Sealants "ConSeal" or approved equal, installed in strict accordance with the manufacturer's printed instructions. Clean concrete surfaces to be joined, removing dust, dirt and other contaminants. Apply "ConSeal" to crown of lap joints, or in the groove of tongue and groove joints. Leave protective backing in place until units are ready to be joined, then strip off tape and keep surfaces free of contaminants until next unit is seated.

C. **STORM DRAIN MANHOLE:**

- 1. Manhole structures shall meet the requirements of ASTM C-478 and ASTM C-923 and shall be equal to American Sectional Standard Manhole Design.

Inside dimension at base of manhole shall be 48" inches in diameter. Base shall be poured cast separately from side walls and shall be a minimum of 6" inches thick. Wall sections shall be a minimum of 5" inches thick. The top manhole shall have a bottom section, intermediate wall section as needed, and a tapered top section, having a minimum inside diameter of 24" inches.

2. Provide a cast iron frame and cover plate designed for heavy traffic loading conditions (H-20 Truck Loading). Provide cast iron rungs cast into one side of the manhole, aligning vertically.
3. Wall units shall have tongue and groove construction sealed with butyl. Provide intermediate wall sections in the number and having the heights as required by the particular location to match invert elevations. Provide openings for piping as indicated.
4. The bottom of the manhole shall be poured with Class C concrete as specified in Section 03300, CAST IN PLACE CONCRETE and shall be shaped to slope toward pipe as indicated.

D. SANITARY SEWER MANHOLE:

1. Manhole structures shall meet the requirements of ASTM C-478 and ASTM C-923 and shall be equal to American Sectional Standard Manhole Design. Inside dimension at base of manhole shall be 48" inches in diameter. Base shall be poured cast separately from side walls and shall be a minimum of 6" inches thick. Wall sections shall be a minimum of 5" inches thick. The top manhole shall have a bottom section, intermediate wall section as needed, and a tapered top section, having a minimum inside diameter of 24" inches.
2. Provide a cast iron frame and cover plate designed for H20 traffic loading conditions. Provide cast iron rungs cast into one side of the manhole, aligning vertically.
3. Wall units shall have tongue and groove construction sealed with butyl. Provide intermediate wall sections in the number and having the heights as required by the particular location to match invert elevations. Provide openings for piping as indicated.
4. The bottom of the manhole shall be poured with Class C concrete as specified in Section 03300, CAST IN PLACE CONCRETE and shall be shaped to slope toward pipe as indicated.

END OF SECTION

## 05500 MISCELLANEOUS METALS

### **PART 1.00 GENERAL**

#### 1.01 WORK INCLUDED:

Furnish labor, materials, equipment and incidentals necessary to fabricate and install miscellaneous metals and other ornamental or specialty work. Furnish hangers, supports, and brackets necessary to fasten other work.

#### 1.02 RELATED WORK COVERED ELSEWHERE:

Structural Steel	Section 05120
Metal Deck	Section 05300
Handrails and Guardrails	Section 05520
Aluminum Composite Panel System	Section 07420
Metal Doors and Frames	Section 08110
Painting	Section 09901

#### 1.03 QUALITY ASSURANCE:

Field welding shall be performed by experienced operators, qualified in conformance with "Standard Qualifications Procedure" of the AWS "Structural Welding Code". Quality of welding shall conform to AWS Section 5-2.4.3 "Workmanship".

#### 1.04 SUBMITTALS:

- A. Submittals shall be in accordance with Section 01300, SUBMITTALS and shall include:
  - 1. Shop drawings showing fabricated items.
  - 2. Product data sheets for manufactured components.
- B. Samples will be furnished when requested by the Contracting Officer. Samples shall be manufacturer's stock and shall be complete as required for installation into the structure. After approval the samples may be incorporated into the work.

#### 1.05 STANDARDS AND REFERENCES:

##### A. FEDERAL SPECIFICATIONS:

FF-B-588	Bolt, Toggle, and Expansion Sleeve, Screw
FF-H-111	Hardware, Builders' Shelf and Miscellaneous
FF-S-85	Screws, Cap, Slotted and Hexagon-Head
FF-S-92	Screws, Machine: Slotted, Cross-Recessed or Hexagon Head
FF-S-111	Screw, Wood
FF-S-325	Shield, Expansion: Nail, Expansion; and Nail, Drive Screw (Devices, Anchoring, Masonry)

FF-W-84	Washers, Lock (Spring)
RR-G-661	Gratings, Metal, (Floor, Except for Naval Vessels)
RR-W-360	Wire Fabric, Industrial (Bird Screen)
RR-W-365	Wire Fabric, (Insect Screening)
TT-P-645	Primer, Paint, Zinc Chromate, Alkyd Type
TT-V-51	Varnish; Asphalt

B. MILITARY SPECIFICATIONS:

MIL-P-6883	Paint, Blended-Type, Coat-Tar-Pitch Base, Bituminous
MIL-P-21035	High Zinc Dust Content, Galvanizing Repair

C. THE ALUMINUM ASSOCIATION (AA) PUBLICATIONS:

"Standards for Anodically Coated Aluminum Alloys for Architectural Applications."

"Designation System for Aluminum Finishes."

D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) PUBLICATIONS:

ASTM A-36	Specification for Structural Steel
ASTM A-53	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A-123	Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A-153	Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A-500	Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A-525	Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

E. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PUBLICATION:

ANSI A14.3	Safety Code for Fixed Ladders
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F. AMERICAN WELDING SOCIETY (AWS) STANDARD:

AWS D1.1	Structural Welding Code - Steel
AWS B1.10	Guide for Non-Destructive Inspection of Welds
AWS A5.1	Specification for Mild Steel Covered Arc Welding Electrodes
AWS A5.5	Specification for Low Alloy Steel Covered Arc Welding Electrodes

G. STEEL STRUCTURES PAINTING COUNCIL (SSPC) PUBLICATIONS:

Steel Structures Painting Manual, Volume 2

1.06 DELIVERY AND STORAGE:

Ship expansion joints to site in protective cartons.

1.07 JOB CONDITIONS:

- A. Contractor shall verify all dimensions and shall take all field measurements necessary to establish size and connections prior to fabrication. Provide any anchors, brackets, supports, braces, connections and fasteners necessary to assemble the various components and anchor into position into the structure.
- B. Holes for bolts and screws shall be drilled or punched. Mismatched holes will not be allowed. Fasteners shall be concealed wherever possible. Exposed fasteners shall be of compatible materials and shall match color and finish of surrounding materials.
- C. Each component shall be of adequate size and strength necessary to fulfill its function. Failure of any part of the assembly is cause to reject the entire component. Component shall be assembled in a neat and substantial manner. Joints exposed to the weather shall be formed in a manner to exclude water.
- D. Items noted to be galvanized shall be hot dipped processed after fabrication. Galvanizing shall conform to the requirements of ASTM A-123, A-306, or A-525, as applicable. In addition to specific items shown or specified to be galvanized, galvanize items of this work which are fabricated of ferrous metal and exposed on or outside of the exterior surfaces of the building above or below grade. Galvanize after fabrication. Take proper precautions to prevent warping of the metal. Straighten any item that does become warped.
- E. Provide miscellaneous plates, brackets, frames, anchors and other steel fabrications as indicated on the drawings or required to make connections to components furnished under other sections of the specifications. Provide brackets for elevators and rails, precast concrete panels, and frames for mechanical equipment.

## **PART 2.00     PRODUCTS**

### **2.01     MATERIALS:**

#### **A.     STRUCTURAL STEEL:**

ASTM A-36 having a minimum yield strength of not less than 36,000 psi.

#### **B.     MISCELLANEOUS STEEL:**

Rolled shapes complying with ASTM A-36; plates and bars complying with ASTM A284.

#### **C.     STRUCTURAL CAST STEEL:**

Conforming to ASTM A-148, Grade 80-50.

#### **D.     GENERAL PURPOSE CAST STEEL:**

Conforming to ASTM A-27, Grade 65-35.

#### **E.     STEEL FORGING:**

General purpose, conforming to ASTM A-668, Class C or F.

#### **F.     CAST IRON:**

Soft, gray iron, conforming to ASTM A-48, Class 30, having 30,000 psi tensile strength.

#### **G.     GALVANIZING:**

Hot dipped, conforming to ASTM A-123, having a minimum coating of 2.0 ounces per square foot.

#### **H.     WELDING ELECTRODES:**

Appropriate for the intended usage. Electrodes for arc welding shall be series E70.

#### **I.     ALUMINUM:**

Appropriate for the intended usage. Unless used adjacent to anodized aluminum surfaces, finish may be standard mill finish. Anodized coatings shall conform to The Aluminum Association "Standards For Anodically Coated Aluminum Alloys for Architectural Applications". Coating thickness shall be not less than specified in Aluminum Association "Designation Systems for Aluminum Finishes" for the particular application. Alloys shall comply with the following:



ALLOYUSAGE

6061 or 6005	Extruded or rolled structural shapes
6063	Extrusions, general
3003	Sheet, tube or pipe
5005	General purpose sheet
5056	Nails and Rivets
2024	Screws, bolts and nuts

J. STAINLESS STEEL:

Appropriate for the intended usage, complying with ANSI Type 300 or 301 (17%/7%) or 302 (18%/8%). Finish shall be as noted on the drawing.

K. STEEL PIPE:

Welded or seamless type, standard weight, schedule 40 steel tubing conforming to ASTM A-53. Steel tube shall conform to ASTM A 500, grade B.

L. SHOP PAINT:

Shop paint must be suitable for finish coats as specified in Section 09901 PAINTING. Contractor shall coordinate. Shop paint shall be a Zinc Chromate Primer for miscellaneous steel; TNEMEC 99 or approved equal for structural components, and TNEMEC 10-99 or approved equal for components to be fireproofed.

M. FASTENERS:

Appropriate for the intended usage. Fasteners used with galvanized steel shall be zinc coated. Fasteners used on non-ferrous metal shall be bronze or brass. Fasteners shall include but not be limited to:

1. Steel bolts - Low carbon steel complying with ASTM A-307 or A-325.
2. Nails and Spikes - Fasteners complying with Fed. Spec. IV. FF-P-636.
3. Self Drilling Fasteners (SDF) - Corrosive resistant, hex-headed drill pointed, size as appropriate.
4. Power Activated Fasteners (PAF) - Tempered A-151 steel with a minimum tensile strength of 270,000 psi, complying with Fed. Spec. - P3958, Hilti, or approved equal.
5. Sleeve bolts - Ramset "Dynabolt", or approved equal.
6. Concrete expansion bolts - Hilti "KwikBolt II", or approved equal.
7. CMU Fastener - Hilti "KwikTog", or approved equal.
8. Metal Deck fasteners - Corrosive resistant, hexheaded, drill pointed fasteners, Teks, or approved equal.
9. Self-drilling anchors bolts - Zinc-plated, case hardened body with expanding plug, Hilti "HHS" or approved equal.

N. ZINC-RICH COATING:

Specially formulated compound conforming to Navy Specification MIL-P-21035 that produces a coating of approximately 3.0 mils thickness containing not less than 95 percent zinc when applied in one coat according to manufacturer's instructions.

O. BITUMINOUS PAINT:

Heavy bodied asphalt based paint conforming to military specification MIL-P-6883 or Fed Spec TT-V-51.

P. ANCHORS AND BOLTS:

Anchors and bolts shall be stainless steel, cadmium plated or approved equal.

Q. STUD ANCHORS:

Stud anchors shall be as manufactured by Nelson Stud Anchors or approved equal.

2.02 FABRICATIONS:

- A. Fabricated components shall be assembled in the shop whenever possible. Steel shapes shall be cut to accurate size with sharp lines and smooth surfaces. Thickness of metal and general construction shall be adequate to withstand the stresses imposed on the component. Provide lugs, brackets, or rivets necessary for connecting to other components.
- B. Connections shall be secure, either welded or fastened with bolts or rivets. Where the component is to be exposed to view, connections shall be by welding with the welds dressed smooth. Bolts or rivets may be used in unexposed locations.
- C. Structural fabrications shall be made of standard rolled shapes, plates, bars, or strips. Connectors shall generally be made by welding. All connections shall be rigid and secure.

2.03 MANUFACTURED PRODUCTS:

A. STEEL GRATING:

Steel grating shall be Pressure Locked rectangular design, as manufactured by IKG Industries or approved equal. Finish shall be one coat of black paint. Grating shall be designed for a uniform distributed live load as shown on the plans.

B. TROLLEY TRACK AND CARRIER:

Furnish a 16 gauge galvanized steel trolley track having a 350 pound minimum capacity, such as Stanley No. X2641 or approved equal product as manufactured by Unistruct Corporation. Curved trolley track shall be a 16 gauge galvanized steel track having a 24 inch radius, 90 degree turn, such as Stanley No. X2641CT or approved equal. Carrier shall be a bright zinc plated assembly with ball bearing wheels, having a minimum capacity of 175 pounds, such as Stanley No. BBXT2600 or approved equal. All exposed surfaces of the trolley track and carrier assembly shall have a black satin finish.

C. SAFETY TREADS:

Safety treads and nosings shall be 3" wide abrasive-surfaced nosings cut to full width of stairs minus 1/8" each side for stairs, and width of concrete steps minus 3" each side for exterior concrete steps. Safety treads shall have integral anchors for embedding into concrete. Treads shall be as manufactured by Armstrong products, or approved equal.

D. CHANNEL FRAMING SYSTEM:

Steel "C" galvanized channels of required type designed to accept a special spring loaded nut for cable tray support. Touch-up damage due to installation with zinc-rich coating. Unistrut Corporation - P1001, P3300 (concrete inserts) or approved equal.

E. INSECT SCREEN:

Federal Specification RR-W-365, Type II, III, or VII, 18 by 16 mesh, or Federal Specification L-S-125, Type II, 18 by 16 mesh. Color to match louver.

F. BIRD SCREEN:

Aluminum wire screen conforming to Fed Spec RR-W-360, Type I, Class 1, and shall be 1/2 by 1/2 mesh, 0.063 inch diameter aluminum wire. Color shall match louver.

G. STEEL PLATE:

Furnish steel plate for fabrication as indicated on the drawings. Furnish 1/4" or 3/8" thick checkered steel plate where indicated.

H. ACCESS LADDERS:

Fabricate steel ladders with dimensions, spacings, details, and anchorages as indicated. Siderails to be continuous flat steel bars with eased edges. Fit rungs in centerline of side rails, plug weld and grind smooth on outer rail faces. Provide nonslip surfaces on top of each rung, by coating the rung with aluminum-oxide granules set in epoxy-resin adhesive.

Galvanize ladders including brackets and fasteners. Wall anchors shall be stainless steel, cadmium plated or other non-corrosive metal, as approved by the Contracting Officer. Provide ladders at locations shown on drawings.

I. WINDOW STOOLS:

Interior window stools shall be fabricated of 0.70 gauge aluminum. Finish shall be anodized and match window frame color.

J. ANTENNA MOUNT:

Provide special fabrication at cab roof for antenna mounts as detailed on the drawings. Provide 2-1/2" 1.0 threaded schedule 40 pipe nipples inserted into threaded nuts. Install steel air terminal brackets and air terminals as indicated.

K. MISCELLANEOUS STEEL FABRICATIONS:

Fabricate miscellaneous fabricated steel components such as window shade pockets, coordinator jacks, hoist access openings, frame supports, ceiling panel supports and other hangers or brackets indicated on the drawings or as required to complete the installation.

L. FLOOR ACCESS DOOR GUARDRAILS:

Construct special guardrails to the details indicated on the drawings at floor access doors. Guardrails shall be all welded construction, designed to be pivoted and pinned, capable of being lowered into the floor access door opening when not in use.

M. ALUMINUM GRATING:

Aluminum grating shall be pressure locked rectangular design, SG series by Ohio Gratings, Inc. or approved equal. Finish to be mill finish. Design grating for uniform distributed load as indicated on plans for steel grating.

2.04 STEEL FRAMES:

- A. Frames shall not have less than two (2) structural members which span across adjacent purlins. Openings shall be framed with steel angles of a size suitable for the opening size. When wood curbs are detailed as part of the frame design, provide angles having outstanding legs turned upward, with holes punched for attaching wood curbs. Holes shall be spaced at 12" inch centers, with no side having less than three fasteners. Size of frames and opening dimensions shall be coordinated with equipment manufacturer. Minimum size of supporting angles shall be 3 1/2" x 5" x 3/8".
- B. Frames used to support roof top air conditioning equipment shall have additional members to frame each duct penetration of the roof surface. As well as a structural member corresponding to the mounting curb perimeter dimensions of the mechanical equipment.
- C. Frames for roof drains and any other roof penetration not exceeding 24 inches square shall be a minimum size of 2 1/2" x 2 1/2" x 5/16". All other frames shall be as detailed on drawings.

2.05 CAST IRON CASTINGS:

Casting shall be uniform in quality, free from blow holes or other defects. Surface shall be smooth and true to pattern. Metal shall conform to ASTM A-48, Class 40 for grey cast iron castings. Castings shall receive one coat of rust inhibited primer and shall be field painted as specified in Section 09901, PAINTING. Casting shall include the following:

- A. Manhole Covers and Frames

B. Trench Drains

2.06 BRONZE CASTINGS:

Castings shall be uniform in quality, free from injurious defects with smooth surfaces and true to pattern. Casting metal shall be CDA Alloy 844. Casting shall include the following:

Downspout nozzle: Josam 25010 Series or approved equal, satin-finish bronze nozzle with loose all flange and inlet threaded connection, size as required.

2.07 ARCHITECTURAL EXPANSION JOINT COVERS:

Components shall be as manufactured by C/S Group or approved equal. Expansion joints shall be fabricated of extruded aluminum 6063-T5 and shall be of the shape and type necessary for the particular application, equal to the following:

Roof	C/S Group, Model BRJW with elastomeric bellows
Wall/Ceiling	C/S Group, Model FWFC-200 with thermoplastic gasket
Ext. Wall	C/S Group, Model SF-200 with thermoplastic seal and secondary PVC seal
Floor	C/S Group, Model GFT & GFTW-200 with thermoplastic gasket

2.08 FABRICATED STAIRS:

- A. Stairs shall be fabricated to the sizes and slopes indicated on the drawings. Stair stringer shall be fabricated of structural steel shapes cut to proper design and fitted with lugs, brackets and connection angles as necessary to erect and assemble the various components. Stairs shall be capable of sustaining their own weight plus a live load of 100 pounds per square foot, or a moving concentrated load of 1000 pounds. Design and strength shall conform to the requirements of "Metal Stairs Handbook of the National Association of Architectural Metal Manufacturers".
- B. Stairs shall be partially assembled at factory, complete with connection angles and other fasteners and ready for final assembly at job site.
- C. All parts of stair fabrication exposed to view when assembled shall be constructed with all welded fabrication with welds continuous and ground smooth, resulting in an invisible joint. Field connections exposed to view shall be welded. Concealed joints may be bolted or welded type.

2.09 FABRICATED GATES:

Contractor shall fabricate steel gates as indicated on the drawings. Gates shall be shop fabricated in accordance with drawings. Manufacturer shall size and provide hinges at each gate leaf for the extended use. Provide gate keepers. Color to be as scheduled.

## **PART 3.00 EXECUTION**

### **3.01 PREPARATION:**

- A. Inspect surfaces to receive metal components. Ascertain that surfaces are suitable for the attachment of the component.
- B. Drill, punch, cut and tap steel as required for anchoring or accommodating the work of other trades as shown or where instructions for same are given prior to or with approval of Shop Drawings.
- C. Visible joints shall be close fitting, neat and tight. Assemble joints so that they will be as strong and rigid as adjoining section. Make up threaded connections tightly so that threads will be entirely concealed by fittings. Except as otherwise shown, specified or approved, weld shop assembled connections. Rivets, bolts, or machine screws may be used for field connections. Visible rivets bolts, screws, etc., shall have flush or oval heads and shall be countersunk. Seal-weld visible joints and exposed joints their entire length. Other joints may be spot or skip welded unless shown otherwise, or unless they must be continuous. Grind welds where required.

### **3.02 INSTALLATION:**

#### **A. STEEL GRATING FLOORS:**

Provide steel grating at flooring of electrical chases and at other locations as indicated on the drawings. Provide supplementary steel framing at edges of grating, at electrical trays and around access openings. Provide toe guards at open sides of grating. Fasten grating to frame at the ends of the third bearing bar from each side of the panel and to intermediate supports at the middle of the panel. Where hinged grating is indicated, provide a steel angle frame around opening. Provide extra heavy duty hinges and weld to grating and frame.

#### **B. ACCESS LADDERS:**

Install access ladders at locations shown. Provide steel clip angles at each leg and attach to concrete floor with expansion bolts. Provide steel strap supports to ladder legs and attach to construction with expansion bolts or by welding, as appropriate.

#### **C. SAFETY TREADS:**

Install safety treads at each concrete step on the interior and exterior of the building. Safety tread shall be cast into concrete so that top of tread is flush with concrete surface.

#### **D. JOIST ANCHORS:**

Furnish a steel anchor plate for each joist seat fabricated of steel plate with stud anchors. Unless noted otherwise, anchors for "K" series joists shall be 4" x 6" x 1/4" inch plates with two (2) 1/2" x 5" inch long stud anchors, and anchors for long span joists shall be 5" x 9" x 1/4". Anchor plates shall be cast into concrete masonry tie beam at joist locations.

E. ANCHOR PLATES:

Furnish steel anchor plates to be cast into concrete structure and to be used for attaching precast concrete panels or steel members. Anchor plates shall be unpainted steel, except for where plates are installed in exterior surfaces or within one inch of the exterior surface which shall be hot dip galvanized after fabrication.

F. ROOF FRAMES:

Install a roof frame at each roof opening for HVAC units, exhaust fans, roof drains and vent stacks. Set frames level and true and secure to structural purlins by field welding.

G. HANGARS AND STRAPS:

Provide metal hangars, straps, and bracing required to support and secure other work unless specifically shown or specified to be provided by another trade. Carefully coordinate this work.

H. TROLLEY TRACK:

Install trolley track where shown on the drawings. Provide hangars and bracing in accordance with manufacturer's recommendations to ensure the full maximum rated capacity of the system. Coordinate installation with acoustical ceiling work.

I. MISCELLANEOUS STEEL FABRICATIONS:

Fabricate miscellaneous fabricated steel components such as window shade pockets, hoist access openings, frame supports, ceiling panel supports and other hangers or brackets indicated on the drawings or as required to complete the installation.

J. ALUMINUM WINDOW STOOLS:

Provide bent aluminum window stools at inside of fixed window sections of exterior windows at cab.

K. FLOOR ACCESS DOOR GUARDRAILS:

Construct special guardrails to the details indicated on the drawings at floor access doors. Guardrails shall be all welded construction, designed to be pivoted and pinned, capable of being lowered into the floor access door opening when not in use.

L. ANTENNA MOUNT:

Provide special fabrication at cab roof for antenna mounts as defined on the drawings. Provide 2 1/2 1.0 threaded schedule 40 pipe nipples inserted into threaded nuts. Install steel air terminal brackets and air terminal as indicated.

### 3.03 STEEL STAIRS ERECTION:

- A. Furnish steel stair framing. Stairs shall be partially assembled in the shop by welding and shall be erected in place at the job site. Furnish connection plates, splices, brackets and other components necessary to make the connections in the field. Erect components in place, true and level. Miter splices and fit carefully. Structural members not normally exposed to view may be assembled by bolting. Field weld all other connections with welds which are continuous and ground smooth. Joints in stringers shall be welded continuous where exposed to view and welds ground smooth.
- B. Stair pans shall be formed of 14 gauge steel, shaped to conform to stair details. Stair pans shall be field tack welded to steel angles welded to stair stringers at each side bearing. Provide steel plate landings and miscellaneous angles and braces as indicated on the drawings or necessary to complete the project. Provide not less than three (3) 3 inch channel supports at landings, unless shown otherwise on drawing.
- C. Provide concrete fill at each stair tread, complete with safety tread at nosing. Safety tread shall be 1" less than stair width on each side of stairs. Provide temporary wood plank fillers for treads and landings until concrete fill has been placed.
- D. Stairs shall be of equal width having risers of equal height. In any run of stair the height of riser shall not vary by more than 1/8" between any two risers.
- E. Stairs shall properly fit abutting building components. Perform cutting, fitting, drilling and fastening required to complete the work. Erect stairs plumb, level and free of deflection or vibration. Provide brackets and connection plates as necessary to connect to structure. Provide fill plates where necessary to close gaps between stringers and wall surfaces.
- F. Handrails for stairs shall be 1-1/4" diameter steel pipe with welded construction. Posts may be welded to top of stairs stringer or may be welded to a connection plate which in turn is welded to the stringer. Return ends of railings to walls. Splices in handrails shall be completely welded and filled, then ground smooth.

### 3.04 FASTENERS:

- A. Furnish the appropriate type of fastener for the application. Fasteners shall be of the type and material proper for intended use and in sufficient quantity for the spacing. Bolts shall be a minimum of 1/2 inch diameter, spaced not to exceed three foot center for attaching steel, or two feet centers for attaching wood.
- B. Generally use the following fasteners as designated:
  - 1. Masonry: Machine bolts with lead or malleable iron expansion shields, or toggle bolts as appropriate.
  - 2. CMU: Toggle bolts.
  - 3. Concrete: Embedded bolts, cast-in-place inserts with twist in bolts, or expansion bolts with expansion shields.
  - 4. Gypboard: expansion anchors or toggle bolts.
  - 5. Wood to metal: machine bolts with washers and nuts.
  - 6. Wood: wood screws, lag screws, proper nails as appropriate.



7. Wood to concrete: cast in place anchor bolts, expansion bolts or power driven fasteners.

### 3.05 ARCHITECTURAL EXPANSION JOINT COVERS:

- A. Furnish and install expansion joints at any exposed location that expansion joints occur, generally flush to surfaces. Expansion joints shall be the manufacturer's standard design similar to those specified. Provide fasteners of the appropriate type for the installation and attach securely. Install expansion joints at floors, walls, ceilings and roof. Colors to be selected from manufacturer's complete line of standard colors.
- B. Protect aluminum surfaces in contact with concrete with a coat of zinc chromate or bituminous paint.
- C. Once expansion joints have been installed, protect from damage by covering them with walkboards or other appropriate methods.

### 3.06 FIELD QUALITY CONTROL:

- A. Clean all surfaces, remove rust and prepare for painting. Surfaces which will be in accessible after fabrication or erection shall be painted prior to installation.
- B. Except for galvanized steel and items specifically noted not to be painted, all miscellaneous metal components shall receive a shop coat of paint. Paint shall be applied by brush or spray, applied uniformly without runs or ships. Field painting shall be in accordance with Section 09901 PAINTING.
- C. Any fasteners or miscellaneous components applied on galvanized fabrications shall be galvanized, chromeplated, otherwise shall be painted with zinc-rich coatings.
- D. Dissimilar materials: Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, pressure-treated wood or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint, unless otherwise specified, to prevent galvanic or corrosive action.

END OF SECTION

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